incur none of these costs for its own local operations because it does not use this unworkable and inefficient method of providing service. The collocation requirement thus would impose an overwhelming cost disadvantage upon new entrants.

87. Although AT&T has identified some 30 different types of BellSouth charges and internal costs that would be occasioned by the collocation proposal, it is important to recognize that AT&T's cost estimates largely reflect "best case" assumptions and even then necessary simplifying assumptions have required the exclusion of many significant costs. For example, AT&T's estimates essentially assume that all construction, pre-wiring, cross-connects and service turnups go without a hitch. But BellSouth's demonstrated incentives and abilities to impede competition make it certain that additional delays and problems would occur, and one would therefore expect the need for significant "re-working" and troubleshooting and hence significantly increased costs -- both for internal CLEC technicians and BellSouth "security escorts." Similarly, these AT&T estimates do not account for the significant work and costs that would follow from the inevitable maintenance and testing problems described above. Further, AT&T's estimates assume that the entrant would be collocating in order to connect voice-grade POTS circuits only. This simplifying assumption eliminates the need to calculate connectivity and internal costs associated with DS-1 UNE Loops, including additional equipment in the entrant's cage, such as DCS or DSX frames needed to cross connect the DS-1's, the need for a larger cage enclosure to accommodate the DCS/DSX and associated testing equipment, and additional technicians to attend to and test the DCS/DSX frames. The cost estimates also assume that no additional costs will result from collocation complications arising from customers currently served by

IDLC. While reconfiguring IDLC for purposes of collocation would likely impose significant additional costs, we have been unable in the time available to estimate these additional costs. As demonstrated below, even ignoring these and other significant costs, however, the discriminatory costs associated with the collocation proposal are enormous.

88. Upfront Costs. Critical to any understanding of the magnitude of upfront costs associated with the collocation proposal are three facts: (1) an entrant seeking to introduce competition and make competitive offerings statewide (or nationwide) would, under BellSouth's proposal, be required to undertake physical collocation in each BellSouth wire center;[31] (2) because the entrant could not predict in advance the distribution of its new customers among central offices, it would, in order to avoid service disruptions and offer competitive provisioning intervals, base its buildouts on expected peak, not average, central office demand for its services; and (3) to minimize customer service outages, a CLEC would have to bear the costs or prewiring prior to the acquisition of a single customer. Accordingly, the investment required in each of BellSouth's more than 200 Local Exchange Routing Guide locations would be substantial.[32]

89. The following summarizes how AT&T estimated the order of magnitude of these upfront costs in Louisiana. Upfront space and related costs include costs to: (i) design, engineer, and project manage the build-out of a collocation room for

[31] It is AT&T's understanding that physical collocation would not be required for tandem or cellular switches.

[32] If ICO offices are included, there are approximately 20,000 offices nationwide.

subsequent cage construction, (ii) establish data records and have architectural drawings prepared, and (iii) make any necessary building modifications and rearrange equipment and power. Because, as noted above, BellSouth's approved rates include no definite figures for these costs, AT&T assumed a buildout cost of approximately $25,000/office for a 10 foot by 10 foot cage. This is far less than what BellSouth and other ILECs generally have sought for collocation. The $25,000/office figure is also conservative in light of ILEC claims that there is no space in many offices and that CLECs will have to obtain more expensive space in remote facilities and pay for cabling between buildings.[33] Finally, BellSouth charges an additional $4910 "application" fee for each office.

90. Upfront "connectivity" costs were then estimated. As noted, in order to minimize the customer disruption and service outages inherent in the ILEC collocation proposals and to take advantage of scale economies, an efficient entrant would need pre-installation, not just of the cage itself, but also the necessary "connectivity" equipment (e.g., cabling, frames, blocks, cross-connects) for serving multiple customers through collocation. In that way, the only physical wiring that should have to be done after the customer requested service from the entrant would be the two cross-connects at the MDF (themselves costly, time-consuming and totally unnecessary).

91. The entrant would obviously have to make assumptions about how many pre-wired lines would be necessary to achieve connectivity "readiness." That could not

[33] Our estimates also assume that collocation here would not require the entrant to locate the equipment and facilities normally found in traditional (loop resale) collocation scenarios, nor would it necessitate any entrance cable structure, DC power or transmission capabilities that extend from the collocation cage enclosure to the entrant's switch site.

be done simply by estimating the maximum number of customers the entrant could expect to attract and then dividing by the number of offices, however, because the entrant has no way to predict the distribution of its new customers among offices. It may turn out that 20% of customers served by one wire center choose the entrant but that none of the customers served by another wire center do so. Thus, to avoid the customer disruption that could destroy future marketing efforts, the entrant would have to buildout connectivity at each end office based on potential peak wire center demand, not expected or average demand. Accordingly, AT&T's cost estimates assume pre-wiring of 1,000 lines in most offices, 10,000 lines in major urban offices, and 5,000 lines in smaller urban and suburban offices. Once those assumptions are made, it is a relatively simple matter to estimate and sum the ILEC construction and wiring charges.

92. Next, internal capital expenditures were conservatively estimated. These costs include cross-connect frames and necessary equipment which are engineered, furnished and installed in the collocation space. Our estimates do not include the significant expenditures on OSS upgrades and modifications in order, among other things, to inventory the technical specifications for the switch/loop/cross-connect configuration employed for every CLEC customer. Nor do they include, for example, additional capital investments in motor vehicles, tools, and garages to be used by CLEC technicians maintaining the collocated space.

93. Based on these assumptions, we estimate that upfront incremental costs to a single CLEC with a statewide Louisiana offering could easily exceed $45 million before the CLEC had a single paying customer. Notably, this estimate does not include the

substantial costs associated with placement (in each office) and wiring of the intermediate distribution frame ("IDF") that some ILECs have claimed would be required in any CLEC collocation arrangement. The requirement of IDFs could greatly increase the upfront costs to accommodate the additional cabling and cross-connects that would be required -- costs that we have not included in our analysis.

94. Customer Migration Costs. Estimating customer migration costs in an environment in which everything but cross-connects is pre-wired is a fairly straightforward matter of combining BellSouth's two-wire unbundled loop connect charge of $29.96 and its two-wire unbundled port charge of $16.43 for a "best case" total of $46 for every new customer served. And, in the real world, of course, there will be customer "churn" which would allow BellSouth to assess additional and more frequent disconnection charges and other non-recurring charges.

95. Monthly Recurring Costs. BellSouth's approved rates include numerous monthly recurring charges apparently designed to reflect rent and maintenance on everything from space (including floor space and riser space if the collocation cage enclosure is located on a different floor from the MDF) to the cross-connects and POT bays. According to their Louisiana tariff, BellSouth also intends to recover cage construction costs on a monthly recurring basis. Based on our assumptions, these recurring costs alone would add nearly $1.40/month for each customer. Our estimates here do not include the CLEC's significant internal recurring labor and operating costs to maintain the collocated facilities, nor do they include any impacts the collocation requirement might have on monthly recurring charges for unbundled network elements.

96. In sum, even with conservative assumptions, the costs to a new entrant of attempting to provide service statewide using manual recombination through collocation would be prohibitive in most if not all cases. A CLEC would pay more than $45 million in upfront costs and then an additional $46 in cross connect charges at every customer cutover. Even if the CLEC could attract and retain 10 percent of BellSouth's customers (approximately 220,000 of 2.2 million lines) in a year, that would mean up-front and non-recurring charges of more than $220/customer -- a debilitating competitive disadvantage compounded by the additional $1.40/customer handicap the entrant would face each month in recurring charges.

IV. ALTERNATIVES TO COLLOCATION FOR RECOMBINING THE LOOP AND SWITCHING ELEMENTS

97. Collocation is not the only method available for the separation and recombination of network elements. There exist other arrangements, both manual and electronic, that would also permit the recombination of network elements and that likely would avoid much of the costs and service degradation of collocation, while providing the same or superior levels of network security. Further, in contrast to collocation, many of these other arrangements do not require a CLEC to provide its own facilities in order to purchase UNEs, and thus permit CLECs "to provide telecommunications services completely through access to the unbundled network elements of an incumbent LEC's network." Iowa Utilities Board, 120 F.3d, at 814. Nevertheless, none of these arrangements eliminates the

problem of customer service outages, and each has additional distinctive disadvantages that further hamper competitive entry using combinations of network elements.

98. Because the collocation alternative is so plainly discriminatory and anticompetitive, it is appropriate for BellSouth and other incumbent LECs to examine other alternatives that might avoid the worst excesses of the collocation approach. While there may be other possibilities, I will discuss four alternatives here -- two involving manual recombination at the MDF, and two involving electronic recombination. Of these, the most promising is an electronic method that uses existing switch intelligence and the recent change process.

A. Manual Recombination At The MDF

1. Direct Separation and Recombination

99. One possible alternative, for example, would be to eliminate all use of additional wiring, connector blocks, and frames by performing the separation and recombination directly at the MDF. To separate the loop from the switch, it is sufficient for an ILEC technician to disconnect the cross-connect at two terminals on the one connector block. Once that separation is made, the loop and switch are no longer physically connected, and the customer's phone cannot be used to make or receive calls until the loop is reconnected to (or recombined with) the switch. To recombine the loop and the switch, it is sufficient for a CLEC technician then to reconnect the cross-connect at the terminal.

100. In the example I just described, one can picture an ILEC technician and a CLEC technician standing shoulder-to-shoulder at the frame. The ILEC technician would disconnect the wire and the CLEC technician would then reconnect it. The interruption to

the customer's service and the chances for a misconnection would be minimized. The CLEC technician could ensure that the cutover occurred when the customer was not on the line. The ILEC technician could supervise the work of the CLEC technician, thereby fully addressing any network security concerns that an ILEC might raise about granting CLEC technicians unsupervised access to its MDF.

101. This direct separation and recombination approach would eliminate any need for establishing collocation space, and also eliminate any need for the many tie cables, connector blocks, cross-connections, and frames that collocation would require. This, in turn, would reduce the start-up time needed before loop/switch provisioning could begin, as well as the cost to both CLEC and ILEC. Equally important, this approach would eliminate the new points of failure introduced by the ILECs' proposed collocation requirement, thereby reducing the degradation in service quality that is inevitable with collocation. It would also eliminate the complications that collocation and its associated additional wiring would create for the CLEC's use of the switch's MLT capabilities; because the length of the loop would remain the same as it was before, no recalibration of the MLT function or reengineering of the loop would be needed in order to assure the continued accuracy of test results and service quality.

102. Of course, this approach has significant drawbacks as well. It does not offer a solution for separating and recombining IDLC loops thus making it impossible for CLECs to serve these customers using a loop/switch combination. As customer churn develops, the repeated wrapping and rewrapping of the same cross-connect is likely to lead to inadvertent breakage. When that occurs, and if there is not enough slack left in that wire for

it to be reused (which often will be the case), then the technician will need to replace the entire cross-connect, a much longer process and during which the customer will be completely out of service. And while labor time and cost is significantly reduced over collocation, this approach still is significantly labor-intensive and likely to gate entry. Not only are two technicians required for each order, but no work could proceed unless the two were present simultaneously at the MDF. The need to coordinate the schedules of both an ILEC and CLEC technician would inevitably introduce provisioning delay (not simply for the initial provisioning of a new CLEC customer, but as customer churn develops, for switching customers among CLECs and back to the ILEC.) And apart from scheduling problems, it is undesirable to require two individuals to perform work that -- if it is going to be performed at all -- clearly could be accomplished just as effectively but far more efficiently by one person alone.

103. While most of these problems appear inherent in the direct separation approach, the problem of needing shoulder-to-shoulder technicians could be addressed. There are two basic options. The first, involving a jointly-retained third-party vendor, is just a slight variation on the approach described above. The second, involving pre-wired CLEC cross-connects at the MDF, requires slightly more explanation and introduces additional disadvantages, and is thus discussed as a separate alternative below.

104. In the first option, instead of using two technicians, the CLEC and ILEC could jointly retain an ILEC-approved third-party vendor. The ILEC would retain the vendor for the purpose of disconnecting the wires, and the CLEC would retain the vendor for the purpose of reconnecting the wires. Both the disconnect and the reconnect job would

be performed in sequence for any particular order, with the ILEC and CLEC paying their respective shares of the costs. Working from methods and procedures jointly developed and approved by the ILEC and CLEC, the third party vendor could most efficiently implement the direct separation and recombination approach.

105. This single-technician approach should not pose any legitimate concern about network security. ILECs routinely retain third-party vendors to do work on their MDFs as well as on other equipment in their central offices, including work in connection with physical and virtual collocation. Indeed, ILECs require CLECs to use these ILEC-approved vendors in engineering and installing equipment in connection with their collocated space -- work that includes installing new connector blocks on the MDF and connecting those blocks, using tie-cables, to the CLEC's frame in the collocated space.[34] Because these vendors would be retained by the ILEC as well as by the CLEC, the vendors could reasonably be expected to complete their task faithfully and accurately according to the jointly agreed methods and procedures.

106. Indeed, if there were an objection to this approach, it is likely to be that the mere task of disconnecting and then reconnecting a single pair of wires seems somehow insufficient to accomplish the grand task of recombining network elements. But if this were a valid objection, it would be equally applicable to the collocation approach that BellSouth and other RBOCs (including Ameritech, Bell Atlantic, and SBC) have all argued is sufficient to establish recombination. In each case, the essence of the exercise is simply to

[34] A list of vendors approved by BellSouth to perform these functions on behalf of CLECs is appended as the Varner Aff., Exh. AJV-4, pp. 15-17.

disconnect the loop from the switch and then reconnect it. More fundamentally, such an objection reduces to the claim that this approach is not sufficiently costly or disruptive. But that is not an objection; it is a virtue.

107. The only rationale -- apart from anticompetitive spite -- that the RBOCs have advanced for forcing a CLEC to perform the disconnect/reconnect operation in a little room in some remote corner of the central office, as opposed to at the MDF, is "network security." Because the ILECs can directly address that concern using the exact same procedures (certified third-party vendors) that they use today in the context of accommodating not only collocation but growth in its own customer base, there is no good reason not to consider direct separation and recombination at the MDF as an alternative to collocation.

2. Pre-Wired Connector Blocks At The MDF

108. A second basic approach that eliminates both the need for collocation and for the two technicians shoulder-to-shoulder at the MDF is for the CLEC to pre-wire its own cross-connect at the MDF. In this approach, a CLEC technician (or vendor approved by the ILEC but retained by the CLEC) would first install connector blocks on the MDF. These connector blocks would be identical, as a practical matter, to the connector blocks that would likely be installed for use in the collocation arrangement.

109. Rather than run tie cables from these connector blocks to an IDF or to the collocation space, however, the technician would simply install permanent hard-wired connections between the connector blocks at the MDF. The CLEC's connector blocks would thus be completely "cross-connected" in advance just as they would be in the CLEC's

collocated space. The only difference would be that the cross-connection would be done right at the MDF, rather than in the collocated space.

110. Once these connector blocks and cross-connects were installed by the CLEC, the provisioning of loop and switch combination could proceed without further need for CLEC access to the MDF. The ILEC technician, however, would still need to perform the two cross-connections needed in the collocation scenario; that is, the technician would disconnect the cross-connect wire from the terminal at the connector block on the loop side of the MDF, and then connect to that same terminal the tie cable from the CLEC's loop-side connector block. The technician would then have to repeat this same procedure on the switch side.

111. Provided that there is sufficient room to place new connector blocks for CLECs on the MDF, this approach preserves some of the advantages of the first approach of direct separation and recombination at the MDF. It eliminates the need for establishing collocated space and installing new frames and tie-cables. It reduces, but does not eliminate, the number of additional points of failure, and eliminates the need for adjustment to engineering records regarding loop length for proper MLT testing. If, however, multiple CLECs attempt to pre-wire connector blocks on the MDF (which they would not be required to do in the direct connection and reconnection approach), they may quickly run out of space on the frame. In that event, the ILEC would need to extend the MDF. If no further expansion of the MDF was possible, CLECs would lose any further access to unbundled loop and switching elements.

112. In any event, this approach would not alleviate the gating of the number of customers who could change their local service provider in a given day as a result of the need for double cross-connections, nor the problem of customer service outages, nor the costs and delay of establishing such pre-wiring in every central office, nor the uncertainty as to alternative arrangements in a congested office that lacked additional space at the MDF for CLEC connector blocks. Further, when customers change from CLEC to CLEC, ILEC technicians would need access to the CLEC connector block number assignments. These ILEC technicians would also need to coordinate the cutover with both CLECs.

113. Although ILECs may be expected to raise network security concerns about having CLEC technicians adding blocks to ILEC MDFs and pre-wiring them, those concerns would be entirely unfounded. As noted above, today, for traditional collocation intended simply to provision unbundled loops, third-party vendors, approved by the ILEC but retained by the CLEC, are permitted direct access to the MDF for the purpose of installing connector blocks and tie cables. These connector blocks are connected by the tie cables to the connector blocks in the collocation cage (either directly or by way of an IDF). Thus, when an ILEC technician "rolls" a loop to a CLEC today, that technician creates a new connection between the ILEC's connector block where the loop originally terminated and the CLEC's connector block that the CLEC's vendor installed.

114. This approach does, however, carry with it a unique disadvantage that could create significant problems as customer churn develops in the market. The temptation of an ILEC technician, when the ILEC wins back a CLEC customer, will be to disconnect only one end of each cross-connect wire (the loop side and switch side) of the CLEC's cross-

connects, leaving in place the connections on the connector blocks dedicated to the CLEC. While the CLEC records will indicate that the terminals on these connector blocks are ready for reassignment, the ILEC technicians will find that the block assignments on the CLEC-dedicated connector blocks are taken (though only by "inactive" cross-connect wires improperly left in place by a prior ILEC technician). This mismatch will further complicate and delay provisioning.

B. Electronic (Logical) Recombination

115. Recombining elements by manually disconnecting and reconnecting wires is not the only method of separating and recombining the loop and switching elements. There are at least two other technically feasible methods that would permit ILECs to separate and CLECs to recombine the loop and switch electronically. One method of electronic recombination involves the use of automated cross-connect equipment that is under development but is not yet commercially available. The other, more immediately promising alternative involves use of switch intelligence and the "recent change" process.

1. Electronic Cross-Connect Systems

116. Telecommunications carriers have for years used electronic systems to cross-connect and reconfigure digital circuits. These systems are known as digital cross-connect systems, or "DCS." Equipment manufacturers today are developing similar electronic cross-connect systems to replace the wired cross-connection of analog circuits at the MDF. For example, I have received information about one product, which is not yet commercially available, that is being designed to be installed between the line side and

switch side of the MDF and that -- if deployed by an ILEC -- supplant the need for manual cross-connections.[35]

117. Use of a "DCS-like" system in lieu of manually wired cross connections would simplify the process of individual cutovers in some respects, although the arrangements for establishing CLEC access to such equipment need further consideration. But the cost of retrofitting existing central offices with such equipment would be substantial, both in dollars and in disruption to existing customer service. Thus, not only is this technology not available today, it may not be widely deployed in BOC central offices for some years. And where it is deployed, it will not permit CLEC access to IDLC loops. Because such loops are digital, they would not have an appearance on the electronic cross-connect equipment, but would continue to terminate directly at the switch.

2. Recent Change Process

118. Another potential alternative for electronic recombination involves use of the ILECs' "recent change" process. Recent change is the process that ILECs use today to separate, recombine, and modify elements such as the loop, switching, and transport, to serve their customers. Granting CLECs controlled access to this process, much as the ILEC's Centrex customers have today, for the limited purpose of recombining an electronically separated loop and switch merits serious consideration.

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[35] One known example of this product is being developed by Integrated Network Corporation (INC), and is known (appropriately enough) as Copper LINC.

119. When ILEC customers discontinue service today, the ILECs access the switch electronically by sending a message -- known as a "recent change" -- that instructs the switch software to block the connection between a specified switch port and its associated loop. To reestablish telephone service, the ILEC again sends an electronic message to the switch instructing it to restore the connection, specifying the particular switch port and its associated loop to be restored.

120. This electronic process disconnects the loop from the switch every bit as effectively as if the ILEC assigned to a technician in the central office instructions to disconnect manually a specific cross-connection on the MDF. The information conveyed by a series of dialed digits does not and cannot reach the call processing software within the switch. In both cases, the end result is that a caller can neither send nor receive calls from the telephone attached to the disconnected loop.[36] The logical disconnection effected by the recent change process allows ILECs to disconnect a line, but, at the same time, to comply with the "warm line" requirements (e.g., permitting 911 calling at all times) that some states impose.

121. ILECs permit their Centrex users controlled access to recent change memory. A typical Centrex end-user is assigned a block of telephone numbers that corresponds to a set of switch ports and loops at a particular end office. Using a remote

[36] With respect to IDLC loops, the recent change process causes the individual customer's service on the IDLC loop to be disconnected, and thus separates the customer's IDLC loop from the switch just as effectively as if the customer had an analog loop that was manually disconnected from the switch port.

terminal, that end-user can access the switch electronically, and effectively disconnect and reconnect particular loop and switching elements for particular lines within that Centrex user's assigned block. This gives each Centrex user the power to add a new line, reassign a number to a different line, disconnect a line, and so on.

122. There is no reason not to consider whether a similar approach could be used to permit CLECs electronic access to disconnect and reconnect the loop and switching elements that they seek to use to serve their customers. Of course, such an approach would still impose customer service outages (which could be severe if proper systems and procedures are not developed to coordinate the recent change activity), and would also delay UNE-based entry due to systems development work. These are disadvantages that CLECs would not face if able to order existing combinations of UNEs. Nevertheless, this approach might well prove much preferable to manual recombination.

CONCLUSION

123. Carriers seeking access to combinations of an ILEC's network should not be required, as a precondition of gaining such access, to obtain collocated space from the ILEC. Such a requirement is inherently discriminatory to UNE-based CLECs and burdens them with extreme and unnecessary costs. It also precludes them from being able to combine the unbundled network elements without using their own facilities. Adoption of a collocation requirement for recombination is thus unwarranted.

FCC DOCKET CC NO. 97-231
AFFIDAVIT OF ROBERT V. FALCONE

I declare under penalty of perjury that the foregoing is true and accurate to the best of my knowledge and belief.

Executed on November 19, 1997

Robert V. Falcone

District of Columbia (ss)

SUBSCRIBED AND SWORN TO BEFORE ME this 19th day of November 1997.

/Linda L. Mangum
Notary Public

My Commission Expires:

My Commission Expires May 31, 1998

FCC DOCKET CC NO. 97-231
AFFIDAVIT OF ROBERT V. FALCONE, MICHAEL LESHER

I declare under penalty of perjury that the foregoing cost and pricing information is true and accurate to the best of my knowledge and belief.

Executed on November 21st, 1997.

Michael E. Lesher
Michael Lesher

SUBSCRIBED AND SWORN TO BEFORE ME this 21st day of November, 1997.

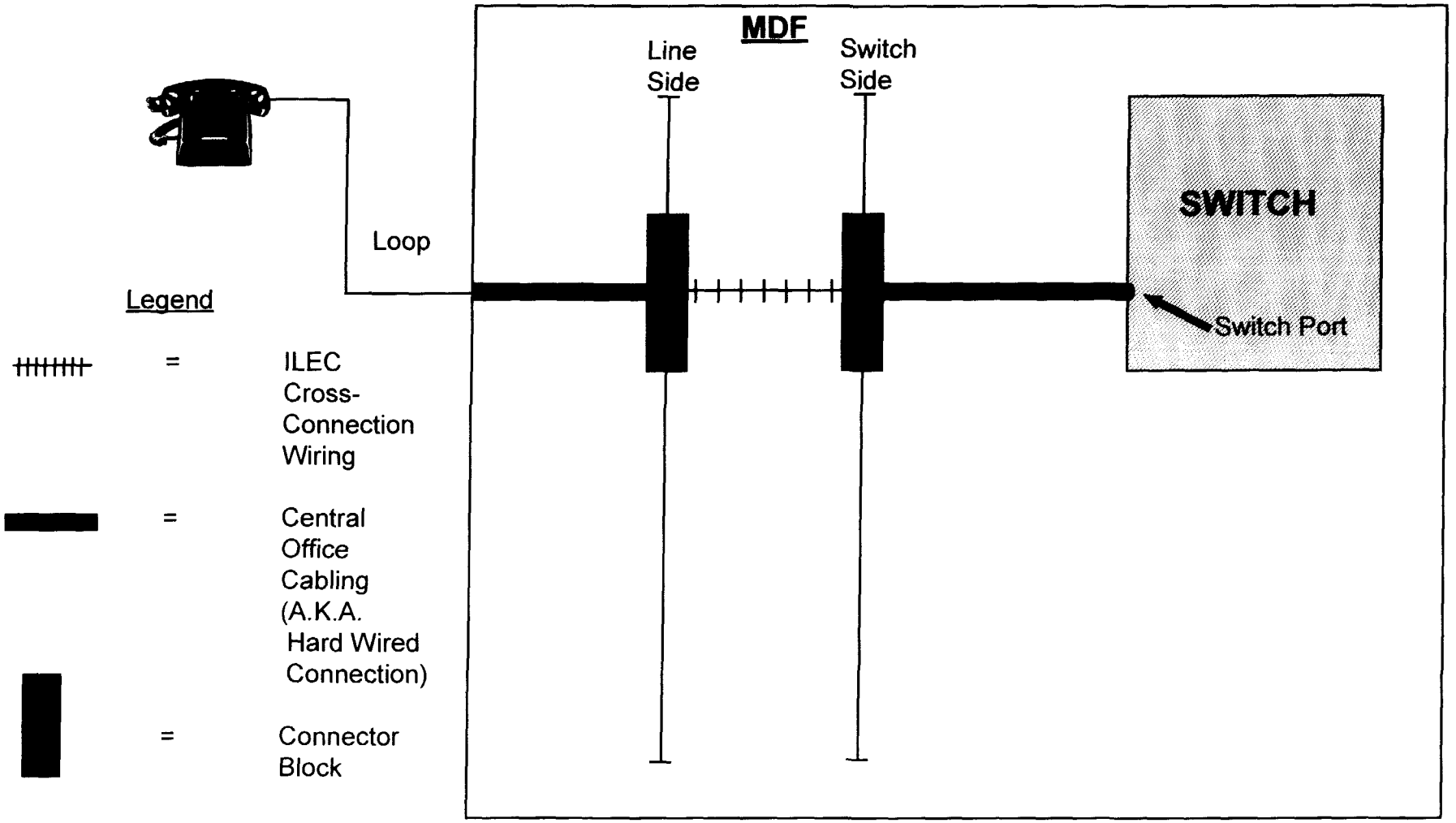
Patricia A. Perhac
Notary Public

My Commission Expires:

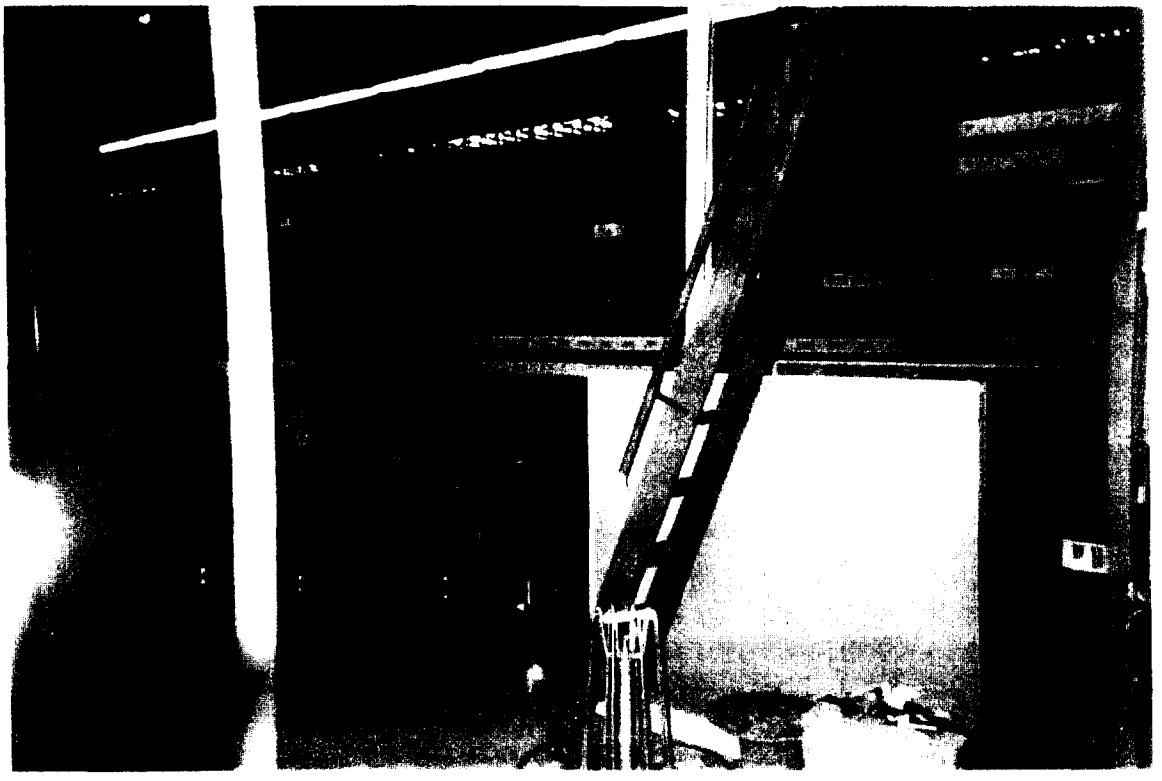
4/8/2002

ATTACHMENT 1

Figure 1
ILEC Loop And Switch Port Configuration (Without IDF)



ATTACHMENT 2



ATTACHMENT 3